

We claim:

1. A leak detection system for a fuel dispensing vapor recovery system that recovers vapors during refueling of a vehicle and returns the vapors to a storage tank, comprising:

at least one fuel dispensing point that delivers fuel from the storage tank to the vehicle and returns recovered vapors expelled from the vehicle into a vapor return passage that is coupled to a vapor return pipe and wherein said vapor return pipe is coupled to the storage tank;

an air-flow sensor operatively connected to said vapor return passage to measure the amount of vapor flow being returned to said vapor return passage and said vapor return pipe from said at least one fuel dispensing point; and

a control system that is electronically coupled to said air-flow sensor to receive information about vapor flow detected by said air-flow sensor wherein said control system detects a leak condition in said at least one fuel dispensing point if said at least one dispensing point is idle and said air-flow sensor registers vapor flow.

2. The system of claim 1, wherein said control system reports said leak detection.

3. The system of claim 2, wherein said control system generates an alarm to report said leak detection.

4. The system of claim 2, wherein said control system reports said leak detection to a remote reporting system.

5. The system of claim 1, wherein said control system is comprised from the group consisting of a tank monitor and a POS.

6. The system of claim 1, wherein said control system detects if said vapor flow is in the forward or reversed direction.

7. The system of claim 1, wherein said leak detection is due to a defective dispensing point in said at least one dispensing point.
8. The system of claim 1, wherein said defective dispensing point is a defective air-valve.
9. The system of claim 8, wherein said air-valve is located in a nozzle of said at least one dispensing point.
10. The system of claim 1, wherein said monitor is coupled to a POS to determine when said at least one dispensing point is idle.
11. A method of detecting a leak in a fuel dispensing vapor recovery system that recovers vapors during refueling of a vehicle and returns the vapors to a storage tank, comprising the steps of:
 - delivering fuel from the storage tank to the vehicle through at least one fuel dispensing point;
 - returning vapors received by said at least one fuel dispensing point that are expelled from the vehicle into a vapor return passage;
 - returning said recovered vapors from said vapor return passage into a vapor return pipe coupled to the storage tank;
 - measuring the amount of vapor flow being returned back to the storage tank from said at least one fuel dispensing point; and
 - determining if vapor flow is detected in said vapor return passage when said at least one dispensing point is idle.
12. The method of claim 11, further comprising the step of reporting said leak detection in said vapor return passage if vapor flow is detected when said at least one

dispensing point is idle in said determining step.

13. The method of claim 12, wherein said step of reporting further comprises generating an alarm.

14. The method of claim 12, further comprising the step of reporting said leak detection to a remote reporting system.

15. The method of claim 11, further comprising the step of determining if said vapor flow is in the forward or reverse direction.

16. The method of claim 11, further comprising the step of communicating with a POS to determine when said at least one dispensing point is idle.

17. A leak detection system for a fuel dispensing vapor recovery system that recovers vapors during refueling of a vehicle and returns the vapors to a storage tank, comprising:

a plurality of dispensing points that deliver fuel from the storage tank to the vehicle and capture recovered vapors into a vapor return passage dedicated to each of said plurality of dispensing points, wherein said vapor return passages are coupled to a common vapor return pipe that is coupled to the storage tank;

an air-flow sensor operatively connected to said vapor return pipe to measure the amount of vapor flow being returned back to the storage tank from said plurality of dispensing points; and

a control system that is electronically coupled to said air-flow sensor to receive information about vapor flow detected by said air-flow sensor, wherein said control system detects a leak condition in either said vapor return passage or said vapor return pipe if all of said plurality of dispensing points are idle and said air-flow sensor registers vapor flow.

18. The system of claim 17, wherein said control system reports said leak detection.
19. The system of claim 18, wherein said control system generates an alarm to report said leak detection.
20. The system of claim 18, wherein said control system reports said leak detection to a remote reporting system.
21. The system of claim 17, wherein said control system is comprised from the group consisting of a tank monitor and a POS.
22. The system of claim 17, wherein said control system detects if said vapor flow is in the forward or reverse direction.
23. The system of claim 17, wherein said leak detection in said vapor return passage is due to a defective dispensing point in one of said plurality of dispensing points.
24. The system of claim 23, wherein said defective dispensing point is a defective air valve.
25. The system of claim 24, wherein said air valve is located in a nozzle in one of said plurality of dispensing points.
26. The system of claim 17, wherein said monitor is coupled to a POS to determine when said at least one dispensing point is idle.
27. A method of detecting a leak in a fuel dispensing vapor recovery system that recovers vapors during refueling of a vehicle and returns the vapors to a storage tank, comprising the steps of:

delivering fuel from the storage tank to a plurality of dispensing points;
recovering vapor expelled from the vehicle at said plurality of dispensing points
and returning said vapor into a vapor return passage dedicated to each of said plurality
of dispensing points;
returning vapors recovered in said vapor return passages to a common vapor
return pipe that is coupled to the storage tank;
measuring the amount of vapor flow being returned back to the storage tank from
said vapor return pipe; and
determining if vapor flow is detected in said vapor return pipe when all of said
plurality of dispensing points are idle.

28. The method of claim 27, further comprising the step of reporting said leak
detection if vapor flow is detected when said plurality of dispensing points are idle in
said determining step.

29. The method of claim 28, wherein said step of reporting further comprises
generating an alarm to report said leak detection.

30. The method of claim 28, further comprising the step of reporting said leak
detection to a remote reporting system.

31. The method of claim 27, further comprising the step of determining if said vapor
flow is in the forward or reverse direction.

32. The method of claim 27, further comprising the step of communicating with a
POS to determine when said at least one dispensing point is idle.